

IN THE CLAIMS

The following is a complete listing of the claims, and replaces all earlier versions and listings.

1. (Currently Amended) A process simulation system ~~for executing~~ including a processor and a memory coupled to the processor, the process simulation system being configured to cause the processor to execute a process simulation by simulating operations of various component elements constituting a production system so as to determine a process organization of the production system, comprising:

an element arrangement data reading ~~means for sequentially reading~~ unit configured to sequentially read component element names which are combined with process identification names from an element arrangement data, the element arrangement data describing an arrangement of the various component elements constituting the production system with combinations of the process identification names and the component element names along a work flow;

an element definition file reading ~~means for sequentially reading~~ unit configured to sequentially read element definition files corresponding to component element names which had been read in by the element arrangement data reading ~~means~~ unit from a plurality of element definition files, the element definition files describing simulation programs for executing operational simulations of the various component elements for each of the component elements;

a program array preparing ~~means for preparing~~ unit configured to prepare a simulation program array by sequentially arranging simulation programs respectively described in element definition files which had been read in by the element definition file reading ~~means~~ unit; and

a program execution ~~means for simulating~~ unit configured to simulate operations of the various component elements constituting the production system by executing a series of simulation programs included in the simulation program array prepared by the program array preparing ~~means~~ unit.

wherein the element arrangement data comprise tabular form data prepared using software capable of editing to add and delete textual information, the work flow being set in a row direction, and the process identification names and the component element names being described in a line direction,

wherein each of the element definition files contains a program description describing an own simulation program and a variable description describing a variable used in the own simulation program, in the variable description, an external reference variable to designate a referring variable being defined in a case of an element definition file to refer to a variable in an other element definition file, and a take-out variable referred to by an external reference variable being defined in a case of an element definition file to make an other element definition file refer to a variable,

the process simulation system further comprising:

a variable array preparation unit configured to prepare a variable array including all variables described in the variable description of each of the element definition files which had been read by the element definition file reading unit; and

a variable corresponding unit configured to make the external reference variable contained in the variable array prepared by the variable array preparation unit correspond to the take-out variable,

wherein a variable name replacing data for replacing a variable name described in the variable description of each of the element definition files to a different variable name is described in the element arrangement data, and

the process simulation system further comprising a variable name replacing unit configured to replace a variable name for which the variable name replacing data is set in the element arrangement data to an other variable name described in the variable name replacing data.

2. (Canceled)

3. (Canceled)

4. (Canceled)

5. (Currently Amended) A process simulation system according to claim [[3]] 1,
wherein:

in the variable array prepared by the variable array preparation ~~means~~ unit, a variable table provided with a required number of registration areas for collectively controlling same kinds of variables ranging among a plurality of component elements,

in element definition files containing the same kinds of variables that are controlled collectively out of the element definition files, initial processing programs to register positions of the variables in the variable array are described in corresponding variable tables in the variable array prepared in accordance with the variables,

the program array preparation ~~means~~ unit prepares an initial process program array by sequentially arranging the initial process programs respectively described in the element definition files which had been read by the element definition file reading ~~means~~ unit, and

the program execution ~~means~~ unit executes initial process programs contained in the initial process program array prepared by the program array preparation ~~means~~ unit and registers positions of the variables in the variable array on the variable table in the variable array for the same kind of variables to be collectively controlled.

6. (Previously Presented) A process simulation system according to claim 1, wherein a simulation program described in the program description of each of the element definition files is described in a ladder language type command group.

7. (Currently Amended) A computer readable recording medium ~~in which~~ storing a program which, when executed, causes ~~for a process simulation system to function~~ a computer to function as the process simulation system ~~[[as]] defined in claim 1 is recorded.~~